

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS

1. A joiner for joining first and second panel members together in end to end
5 relationship, said first and second panel member including a first cavity and a second
cavity respectively, said joiner including;
 - a first joining element, having a housing which has surfaces defining a first
cavity engaging portion to engage with said first cavity of said first member
 - a second joining element having an elongate shaft slidably supported in a
10 passageway extending through said housing, said shaft terminating at one end
thereof in a second cavity engaging portion to engage with said second cavity of said
second member said shaft having a plurality of teeth spaced along the length thereof
so as to form a rack portion; and
 - drive means operable to effect linear sliding movement of said second joining
15 element so as to retract the shaft into said housing, the retraction of the shaft drawing
together said cavity engaging portions to thereby shorten the joiner, said drive means
including a driven worm gear in mesh with said rack portion, and a worm gear
actuator arranged, upon rotation thereof, to drive said driven worm gear, whereby
the rotary motion of the worm actuator is translated into linear motion only of the
20 shaft.
2. A joiner according to claim 1 wherein said passageway extends the entire length of
said housing and slidably and non-rotatably receives said elongate shaft
- 25 3. A joiner according to claim 2 wherein said passageway has a shape
complementary to the cross-sectional shape of said elongate shaft.

4. A joiner as claimed in claim 1, wherein said driven worm gear has an helical thread formed at one end of a driven shaft which has an axis of rotation inclined to said elongate shaft, said thread engaging with said teeth of said shaft.
- 5 5. A joiner as claimed in claim 4 wherein said drive means further includes a gear or cog adjacent the other end of a said driven shaft and co-axial therewith, said gear meshing with said worm gear actuator.
6. A joiner as claimed in any one of claims 1 to 5, wherein said worm drive actuator
10 includes a drive head, said drive head defining a recess to receive a drill bit.
7. A joiner according to claim 6 wherein said worm drive actuator is snap-fittingly engaged in a bore extending through the housing with said drive head recess having its outer edge substantially flush with an outer surface of said housing.
- 15 8. A joiner according to any one of the preceding claims wherein each of the joining elements, the worm gear actuator and the driven worm gear is integrally moulded of reinforced plastics material.
- 20 9. A device for joining first and second members together in an end to end relationship, said first and second members including a first cavity and a second cavity respectively, said device including:
- a first joining element having a housing which has surfaces defining a first cavity engaging portion to engage with said first cavity of said first member;
- 25 a second joining element having a second cavity engaging portion to engage with said second cavity of said second member and an elongate shaft extending from said second cavity engaging portion, said shaft slideably locating in a main passage extending through said housing, and

drive means operable to effect linear sliding movement of said shaft for retracting same into said housing so as to draw together said first and second cavity engaging portions, thereby shortening the joiner and in turn joining together said first and second members.

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10. A device as claimed in claim 9, wherein said main passage has a shape complementary to the cross-section of shape of said elongate shaft so as to prevent rotation of said first joining element with respect to said second joining element.

10 11. A device as claimed in claim 10, wherein said elongate shaft has a substantially rectangular cross section and said passage has a complementary rectangular shape.

12. A device as claimed in claim 9 wherein said shaft has a plurality of teeth spaced along the length thereof so as to form a rack portion, said drive means comprising:

15 a worm gear actuator rotatably supported in a bore extending through the housing; and

a driven shaft carrying at one end a worm gear in mesh with said rack portion and a gear or cog adjacent its other end, which engages with said worm gear actuator, arranged so that upon rotation of the worm drive actuator, the shaft is
20 retracted or extended to thereby shorten or lengthen the distance between the cavity engaging portions.

13. A device according to claim 12 wherein the driven shaft is snugly located in a cavity extending lengthwise of the housing above said main passage, said cavity
25 having an axis which is inclined to the axis of the main passage, said bore having an axis which is perpendicular to the axis of the main passage.